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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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EXAMINER

KHARE, ATUL P

ART UNIT

PAPER NUMBER

1742

MAIL DATE

DELIVERY MODE

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PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/802,816	Applicant(s) OGINO ET AL.	
	Examiner ATUL P. KHARE	Art Unit 1742	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 14 March 2012.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ An election was made by the applicant in response to a restriction requirement set forth during the interview on ____; the restriction requirement and election have been incorporated into this action.
- 4) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 5) ☒ Claim(s) 3-6,8 and 25-28 is/are pending in the application.
- 5a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 6) ☐ Claim(s) ____ is/are allowed.
- 7) ☒ Claim(s) 3-6,8 and 25-28 is/are rejected.
- 8) ☒ Claim(s) 3 is/are objected to.
- 9) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 10) ☐ The specification is objected to by the Examiner.
- 11) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 12) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. ____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. ____. |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date ____. | 6) <input type="checkbox"/> Other: ____. |

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 14 March 2012 has been entered.

Response to Amendment

2. The amendment filed 14 March 2012 has been entered and fully considered.
3. Claims 3-6, 8, and 25-28 are currently pending. Claims 1, 2, 7, and 9-24 are canceled.
4. No new matter has been found.

Claim Objections

5. Claim 3 is objected to because of the following informalities: The term "portions" prior to "periphery" should be deleted, and the term "portion" following "periphery" should be changed to "portions". Appropriate correction is required.

Claim Rejections - 35 USC § 103

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

8. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

9. Claims 3, 5, 6, 8, 25, and 26 are rejected under 35 U.S.C. 103(a) as being unpatentable over Matsuno et al. (JP 02305612) in view of Sreenivasan et al. (US

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2004/0009673) and Deguchi et al. (JP 2002-289560). For examination, a translated abstract will be provided for JP 2002-289560.

10. As to claims 3 and 5, Matsuno teaches a nanoimprint mold for deforming a flat resin substrate or a flat resin film on a substrate to form a fine structure on the substrate, wherein the mold is capable of use with a press machine, said mold comprising a laminated structure, said laminated structure including a base member 4 having a curved surface and a pattern member 3 having a concave-convex pattern, said pattern member being bonded to the curved surface of said base member, perimeters of said pattern member and said base member being coextensive, and said mold being provided with a curved surface on the side thereof on which the concave-convex pattern is formed (fig. 1). How the flat resin substrate or flat resin film are inflected or pressed using the mold and a press machine does not further limit the claimed nanoimprint mold.

Matsuno does not appear to explicitly disclose a central groove extending to the mold's peripheral portions, but this feature was known in the art at the time of the invention. For example, Sreenivasan teaches a similar mold having a concave-convex pattern having a groove formed deeper than the concave portions of the pattern, the groove being formed at a center portion of the mold between periphery portions, wherein the groove extends and is open to the periphery portions, allowing air to be introduced into the groove to provide for a release start point for mold release (figs. 20A-B. [0125], MPEP 2112(I-III)). It would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate the claimed groove, taught

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explicitly by Sreenivasan, into the Matsuno mold in order to inhibit the flow of liquid resin between patterning regions of the mold while additionally facilitating release of the mold from the patterned resin (Sreenivasan [0125]).

Matsuno does not appear to explicitly disclose that the base member has a flat surface on an opposite side of its curved surface bonded to the pattern member, but this feature was known in the art for helping to providing uniform molding pressures. For example, see item 2 in fig. 1 and the abstract of Deguchi. The center portion of the mold has a larger thickness than an edge portion. It would have been obvious to one of ordinary skill in the art at the time the invention was made to apply the claimed base member shape, taught explicitly by Deguchi, to the base member of modified Matsuno's mold in order to help provide uniform molding pressures.

11. As to claim 6, the claimed heating and pressing mechanisms do not further limit the claimed mold.

12. As to claim 8, Matsuno teaches a flexible mold (figs. 1-3), and the mold of Matsuno as modified by the aforementioned Sreenivasan and Deguchi teachings is flexible (see at least MPEP 2112(I-III))

13. As to claim 25, the deep groove of Sreenivasan is configured as claimed.

14. As to claim 26, Matsuno does not appear to explicitly disclose the claimed feature size, but Sreenivasan teaches concave or convex portions having a feature size of less than about 250 nm [0118], and it would have been obvious to incorporate this teaching into modified Matsuno for creating smaller imprint patterns.

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15. Claims 3 and 4 are rejected under 35 U.S.C. 103(a) as being unpatentable over Matsuno et al. (JP 02305612) in view of Sreenivasan et al. (US 2004/0009673) and Deguchi et al. (JP 2002-289560) as applied to claims 3, 5, 6, 8, 25, and 26 above, and further in view of Rowe (US 2,201,302, already of record). As to claims 3 and 4, modified Matsuno does not appear to explicitly disclose an inclined periphery portion forming a thicker periphery than at the center of the mold, but this feature would have been obvious to a person having ordinary skill in the art. Deguchi already teaches an inclined periphery portion as outlined in the rejections above. Additionally, Rowe teaches that it is known to provide a flexible, laminated mold assembly having an inclined periphery, wherein a portion of the center is larger in thickness than the periphery (fig. 4). Rowe suggests that this configuration is chosen merely because the particular embodiment is performed on a spherically concave surface. In view of the teachings of Rowe, one would have found it obvious to adjust the stamp configuration to also print on convex surfaces. Once it is recognized that the stamp may be adjusted to print onto concave surfaces, one would have also found it obvious to provide the opposite configuration as recited in instant claim 4. It would have been obvious to form the modified Matsuno mold to have the claimed inclined peripheries, as taught and/or suggested by Deguchi and Rowe, so that the resulting catered mold assembly may be used to additionally or alternatively print onto a convex or concave surface.

16. Claim 6 is rejected under 35 U.S.C. 103(a) as being unpatentable over Matsuno et al. (JP 02305612) in view of Sreenivasan et al. (US 2004/0009673) and Deguchi et

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al. (JP 2002-289560) as applied to claims 3, 5, 6, 8, 25, and 26 above, and further in view of Chou (US 2002/0132482, already of record). As to claim 6, in the alternative that it is ultimately determined that the claim is not met as outlined above, Sreenivasan teaches a press (fig. 1) and Chou teaches that several means can be used interchangeably to soften or cure the film such as UV and heating ([0027]). It would have been obvious to incorporate the Sreenivasan and Chou teachings into modified Matsuno since Matsuno teaches molding and heating to cure (p. 10, first full paragraph), Sreenivasan teaches a press to facilitate molding, and Chou teaches that UV and heat can be used additionally or interchangeably for curing [0027].

17. Claims 27 and 28 are rejected under 35 U.S.C. 103(a) as being unpatentable over Matsuno et al. (JP 02305612) in view of Sreenivasan et al. (US 2004/0009673) and Deguchi et al. (JP 2002-289560) as applied to claims 3, 5, 6, 8, 25, and 26 above, and further in view of JP 9-511710 (already of record), hereinafter '710. As to claims 27 and 28, modified Matsuno does not appear to explicitly disclose bonding with an adhesive. However, the '710 document teaches bonding a base member and pattern member with PDMS, which functions as an adhesive and helps to facilitate contact with a coarse or curved surface (Translation p. 3, lines 5-6). It would have been obvious to incorporate the '710 teachings modified Matsuno in order to facilitate contact with a coarse or curved surface.

Response to Arguments

18. Applicant's arguments with respect to claim amendments regarding a flat and opposite curved surface of the base member have been considered but are moot in view of the new grounds of rejection outlined above.

19. Additional arguments filed 14 March 2012 have been fully considered but they are not persuasive. The additional arguments appear to be on the grounds that with regard to claims 3 and 4, Rowe teaches nothing with regard to the release of a mold from resin (Remarks p. 8), Rowe does not teach a deep groove (Remarks p. 9), the Rowe stamp is not suitable for nano-imprinting (Remarks p. 10), and Sreenivasan requires printing to a flat surface, so Rowe's curved surface printing teaches away from Sreenivasan (Remarks p. 10). These arguments appear to be an individual attack against Rowe, but one cannot show nonobviousness by attacking references individually where the rejections are based on combinations of references. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981); *In re Merck & Co.*, 800 F.2d 1091, 231 USPQ 375 (Fed. Cir. 1986).

As taught or suggested by the prior art of record, the claimed base member shape and the claimed deep groove were known in the art at the time of the invention. Deguchi explicitly teaches that the claimed base member shape helps to provide uniform molding pressures. Facilitated release from stamped resin is expected to implicitly result from said prior art groove (MPEP 2112(I-III)). Claimed specifics of intended use do not appear to further limit the claimed mold. Claim 3 is met as a result of the Deguchi teachings, and Rowe's incorporated teachings regarding claim 4, to a

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person having ordinary skill in the art, would have provided the benefit of a mold which can be catered for use on non-planar surfaces.

Conclusion

20. Any inquiry concerning this communication or earlier communications from the examiner should be directed to ATUL P. KHARE whose telephone number is (571)270-7608. The examiner can normally be reached on Monday-Thursday 8:30 a.m. - 5:00 p.m. EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Christina Johnson can be reached on (571)272-1176. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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/ATUL P. KHARE/
Examiner, Art Unit 1742

/Christina Johnson/
Supervisory Patent Examiner, Art Unit 1742